Colorado Department of Public Health and Environment

Laboratory Service Division

Marijuana Concentrates Sampling Procedure

1. PURPOSE

The purpose of the sampling standard operating procedure (SOP) is to outline the best practices for the sampling of marijuana concentrates for analysis by certified testing facilities.

Marijuana concentrates are produced by extracting cannabinoids from marijuana plant matter and represent a wide variety of products including: oils, shatter and waxes. Each product has different characteristics and is produced in a different manner. Collection of a representative sample, including subsampling, of these products is essential.

2. TERMINOLOGY AND ACRONYMS

Aliquot – (To take) a portion or subsample from a larger sample

Division – Marijuana Enforcement Division, Colorado Department of Revenue (MED)

METRC – Marijuana Enforcement Tracking Reporting Compliance

Production batch – any amount of Medical or Retail Marijuana Concentrate of the same category and produced using the same extraction methods, standard operating procedures and an identical group of Harvest Batch(es) of Medical or Retail Marijuana; or (b) any amount of Medical or Retail Marijuana Product of the same exact type, produced using the same ingredients, standard operating procedures and the same Production Batch(es) of Medical or Retail Marijuana Concentrate.

Sample – Any item collected from a Marijuana Establishment or Marijuana Business provided to a Marijuana Testing Facility for testing. The following is a non-exhaustive list of types of Samples: Marijuana, Marijuana Concentrate, Marijuana Product, soil, growing medium, water, solvent or swab of a counter or equipment.

Sampling team – The facility or MED personnel, or other designated sampler, who have been assigned responsibility for sampling activities. The sampling team must, at minimum, consist of at least two individuals (one individual taking the sample and the other reviewing sampling information prior to entry into METRC and transport).

Test batch – A group of samples that are derived from a single Production Batch. The combined subset of Samples is collectively submitted for to a licensed testing facility for testing purposes.

3. EQUIPMENT AND SUPPLIES

Equipment (items used repeatedly)
4 mL borosilicate VOA vials or equivalent
Metal Spatulas
Forceps
0.5 mL or 1 mL syringe or pipette
Isopropyl Alcohol (≥ 70%)
METRC Manifest
Chain of Custody Labels
Security tamper evident tape
Custody seals
Sample labels
Ziploc bags
Cooler
Permanent ink pen
Equipment logbook
Analytical balance or scale –The scale used to weigh product to be transported shall be tested and approved in accordance with measurement standards established in 35-14-127, C.R.S.

Supplies (items used only once)
Sterile/sanitized nitrile, latex, rubber gloves
Ice
Deionized Water

4. CONTROLS AND FREQUENCY

4.1 Sampling Frequency

Sampling shall be completed for each production batch or lot as outlined in 1 CCR 212-1/2 R/M 1500 rule series.

4.2 Sample Amount

The Sample amount collected must meet the requirements outlined in 1 CCR 212-1/2 R/M 1500 and must be sufficient to complete the analyses as defined by the marijuana testing facility and/or Colorado Department of Agriculture. The samples should be collected and combined into a single package for submission to the laboratory.

4.3 Sampler Requirements

All samples must be collected by MED personnel or facility approved samplers in accordance with the Division's sampling regulations and/or rules. Facility approved samplers can be either internal personnel trained to collect samples or a third party authorized by the facility to collect samples.

Division personnel, at its sole direction, may assign Division personnel to collect samples. Marijuana businesses (retail or medical), its owners, employees, or representatives shall not attempt to influence or interfere with the sample selection or collection process.

4.5 Sample Collection Data

The sampling document shall include the following information:

1) Person(s) performing the sampling and their company affiliation
2) Time and date of sampling
3) Product name
4) METRC identification
5) Production date
6) Room ID (if applicable)
7) Additional Comments – note anything that may affect the quality of the data analysis, such as; color, thickness, processing technique, etc.
8) Remediation(s), if any
9) Any deviations from sampling procedure and/or sampling plans
10) Person(s) reviewing the sampling process and their company affiliation

A witness shall review the labeled samples to the METRC manifest prior to the samples leaving the facility to be transported to the testing facility. The witness shall initial the manifest indicating the labels and manifest are accurate. The witness must be an independent person not involved in the initial sampling.

5. PROCEDURE

The procedure is designed to ensure that each sampling event shall produce samples that are representative of the production batch specified, regardless of whether the product is for retail or medical purposes.

Sample Plan

A sampling plan generated by the person(s) responsible for the sampling event will be reviewed by the sampling team. This plan should include, at a minimum, the following information:

- Client/Affiliation Responsible & Contact Information (if different from those collecting sample)
- Production batch size
- Sample type (oil, shatter, wax, etc)
- Sample procedure to be followed (i.e. lab specified, CDA specified, LSD SOP, etc.)
- Sampling locations to be collected (determined from the Sampling Location Excel Spreadsheet).
- Testing facility performing the analyses
- Any other additional information necessary to guide the sample team through event-to-project specifications

The sampling plan shall ensure that samples are collected from the maximum number (all, if possible) of the production batch's storage containers. The sampling plan shall document the total number of storage containers that exist for a production batch and the number of containers utilized for sampling. An example sampling plan can be found in Appendix B.

5.1 Pre-Sampling Procedure

Equipment Preparation, Calibration and Environmental Controls

Sampling equipment shall be collected and organized into the area where the sampling shall occur and inspected prior to use. All spatulas/forceps shall be washed, alcohol rinsed, and dried prior to sampling each batch.

Sample containers shall be new and inspected to be clean and dry prior to the sampling event. The appropriate number of containers, defined by the marijuana testing facility and/or Marijuana Enforcement Division, shall be collected for the sampling event.

All required paperwork shall be populated, as much as possible, with pertinent information prior to the sampling event.

5.2 Sample Collection

Minimum Number of Samples

At a minimum, each Test Batch of Retail or Medical Marijuana Concentrate must be comprised of at least the following number of separately taken samples combined into a single sample (i.e. each individually collected sample shall be combined with the others in a single container):

a. For Retail or Medical Marijuana Concentrate Production Batches weighing up to one pound, collect a minimum of eight separate samples at 0.5 grams each.

b. For Retail or Medical Marijuana Concentrate Production Batches weighing more than one pounds but less than two pounds, collect a minimum of 12 separate samples at 0.5 grams each.

c. For Retail or Medical Marijuana Concentrate Production Batches weighing two pounds or more but less than three pounds, collect a minimum of 15 separate samples at 0.5 grams each.

d. For Retail or Medical Marijuana Concentrate Production Batches weighing three pound or more but less than four pounds, collect a minimum of 18 separate samples at 0.5 grams each.

e. For Retail or Medical Marijuana Concentrate Production Batches weighing four pounds or more but less than ten pounds, collect a minimum of 23 separate samples at 0.5 grams each.

f. For Retail or Medical Marijuana Concentrate Production Batches weighing ten pounds or more, collect a minimum of 29 separate samples at 0.5 grams each.

Sample Collection

The samples shall be collected from product in its final, ready-for-sale unpackaged state.

The sampler shall wear sterile nitrile, latex, or equivalent gloves during sample collection. The gloves shall be changed between each production batch to minimize potential cross contamination.

The sample collection vials shall be labeled and sealed with custody tape at the time of sampling.

All vials shall be immediately stored at $6^{o} \pm 4^{o}$ C.

Coolers shall be sealed and a custody seal or tamper evident tape placed on the cooler with the sampler(s) initials, date, and time.

Shatter/Wax/Slab Concentrates

The shatter, wax, or other concentrate slab may have varying degrees of thickness, thus the amounts of cannabinoids, potential residual solvent(s), or pesticides may vary with the thickness of the concentrate. It is important that the samples taken are equivalent from each region of thickness to provide a representative sampling of the overall product. The thinner portions of the concentrate slab will have more surface area exposed allowing for a higher rate of diffusion of residual solvents from the wax or shatter than the thicker portions.

Identify three (3) thicknesses or regions to the product.

Using a spatula or forceps, collect the determined number of subsamples needed from each region of the overall production batch to meet the minimum number of samples described above.

The sample shall be collected and weighed to ensure the correct sample amount has been collected.

The sample vials shall be weighed and tared to ensure that the correct amount of sample is collected. Taring the sample container means to place it on the balance, allow it to come to a stable weight, and then zero out the balance to weigh the concentrate. Record the weight of each aliquot.

Record the weight of the Test Batch on the METRC manifest.

Each vial shall be labeled, closed and sealed with tamper evident tape.

Oil

Oil products shall be allowed to come to room temperature prior to sampling.

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Marijuana Concentrates Sampling Procedure

Small Volume Oils

The oil shall be inverted a minimum of three (3) times to ensure that the oil is homogenous. Each inversion must be complete, i.e. the oil must flow to the cap of the vial and back to the base three times. Each vial shall be weighed and tared prior to aliquoting.

Record the weight and/or volume of each aliquot.

Record the weight of the Test Batch on the METRC manifest.

Each sample vial shall be labeled appropriately and then sealed with custody tape.

Medium Volume Oils

Using a 0.5 mL or 1.0 mL pipette or syringe remove the sample amount for each sample to be collected into a 4 mL borosilicate amber glass auto sampler vial or equivalent. The aliquots shall be taken at different depths of the oil to ensure that the oil is sampled representatively. The top third of the container, middle third of the container and the bottom third of the container shall be sampled. Each vial shall be weighed and tared prior to aliquoting.

Record the weight and/or volume of each aliquot.

Record the weight of the Test Batch on the METRC manifest.

Each sample vial shall be labeled appropriately and the sealed with tamper evident tape.

Large Volume Oils

Large Volume Oil containers are difficult to predict and sample. If possible the same approach should be taken as with medium sized volume oils. The use of longer or larger pipettes may be required.

Record the weight and/or volume of each aliquot.

Record the weight of the Test Batch on the METRC manifest.

Each vial shall be labeled appropriately and the sealed with tamper evident tape.

5.3 Post sampling Procedure

Sample Collection Review

All samples collected shall be reviewed to the METRC manifest, and/or the chain of custody for transporting the samples to the testing facility for testing. A trained sampler or MED employee shall perform the review prior to sample submittal to the testing facility.

Equipment and Sampling Area Clean-up

The area where the production batch sampling occurs shall be cleaned, isopropyl alcohol rinsed, and dried between sampling production batches.

Forceps and any additional sampling equipment (i.e. balances) shall be cleaned, isopropyl alcohol rinsed, and dried between sampling production batches.

Sample Storage and Retention

Immediately store the samples under refrigeration or on ice and retain in a cool environment to ensure that the samples arrive at the testing facility at $6^{o} \pm 4^{o}$ C.

Protection/Preservation – other than thermal preservation, no other protection or preservation protocols have been developed or are required.

Samples shall be stored in a manner to prevent unauthorized access to samples and kept under custody seal until acceptance by the testing facility.

Samples shall be destroyed, when necessary, per applicable Colorado MED disposal rules.

5.4 Transport

Transport should be via a method to ensure that the samples arrive within two days to the marijuana testing facility at $6^{o} \pm 4^{o}$ C. Samples may only be transported by appropriately licensed personnel.

6. QUALITY RECORDS

Retained Quality Records

The following are the list of copies of reviewed documents to be retained for each production batch:

METRC sample manifest
Shipping documentation
Acknowledgement of the testing facility sample receipt

Quality records shall be retained for a period of the current year and the proceeding three (3) years after analysis has been completed.

7. TROUBLESHOOTING

Not applicable

8. INTERFERENCES

Not applicable

9. HEALTH AND SAFETY WARNINGS

9.1 Solvents

All solvent handling must be in accordance to the facilities Hazard Communication Plan, Standard Operating Procedures, and/or the most recent Safety Data Sheet (SDS).

All waste, including any solvent waste, must be disposed of in accordance with local, state and federal regulations.

Use of solvents should only be carried out in well-ventilated area or in a fume hood.

10. REFERENCES

Not applicable

11. REVISION HISTORY

Version Number	Version Date	Description of Change
Revision 0	12/27/2017	Initial Release

12. APPENDICES

Appendix A: Sampling Plan Example

The following is an example of a sampling plan. Any sample plan format that contains the information in the sampling plan section is acceptable.

Sampling Plan

Facility Name: _____

Location:

_____

_____

Sampler Name: _____

METRC ID: _____

Batch ID: _____Batch Size: _____

Strain/Product ID: _____

Sampling Procedure: _____

Sampling Locations: (Attach print out from the Sampling Location Excel spreadsheet)

Testing Facility: _____

Reviewed by: _____

Date: _____